Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-30 (canceled).

Claim 31 (currently amended): A method for dataset <u>modeling and</u> pattern analysis for a plurality of target strings, wherein each target string is a dataset <u>of data</u> ~~and the target strings can be represented by placing marks on points in a multidimensional map such that patterns within each point or between points are extracted visually or mathematically~~, the method comprising ~~the following steps~~:

(a)   <u>providing a multidimensional map comprising points which can serve as domains for an iterative algorithm to generate datasets of data, and each point in the map can be represented by coordinates of the map;</u>

(b)   mathematically generating from a point in the multidimensional map a comparison string comprising a dataset <u>of data, wherein the point can serve as the domain for the interative algorithm to generate a dataset of data;</u>

(c)   ~~comparing a number of the target strings with the comparison string~~ <u>scoring the comparison string</u> to determine ~~for each target string if a mark should be placed on the point in the multidimensional map corresponding to the comparison string; and~~ <u>if the comparison string meets a pre-determined condition or property related to the target string;</u>

(d)   <u>marking the point in the multidimensional map if the score of the comparison string meets the pre-determined condition or property, wherein the marked point serves as a model for the target string;</u>

(e)   repeating the steps <u>(a)-(d)</u> ~~of mathematically generating and comparing~~ for a plurality of comparison strings~~,~~ <u>, to generate multiple marked points on the multidimensional map; and</u>

(f)   <u>extracting visually or mathematically any patterns formed within each marked point or between the marked points.</u>

Claim 32 (currently amended): The method of claim 31, wherein the step of mathematically generating the comparison string comprises using an iterative algorithm~~, such~~

~~that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function.~~

Claim 33 (currently amended): The method of claim ~~32~~ 31, wherein ~~the set of points~~ the multidimensional map comprises a <u>set of points in a</u> region of ~~the~~ <u>a</u> complex plane.

Claim 34 (currently amended): The method of claim ~~33~~ 31, wherein ~~the set of points~~ the multidimensional map further comprises points in ~~and/~~or near ~~the~~ a Mandelbrot Set, or points both in and near a Mandelbrot Set, or a Julia Set.

Claim 35 (currently amended): The method of claim 31 wherein the step of mathematically generating the comparison string further comprises transforming the ~~numbers~~ <u>data in the dataset</u> of the comparison string to have values within a set of interest.

Claim 36 (previously presented): The method of claim 31, wherein the step of mathematically generating the comparison string further comprises laying a grid over the points in the multidimensional map.

Claim 37 (currently amended): The method of claim 31, wherein the step of mathematically generating the comparison string further comprises restarting the step of mathematically generating the comparison string if the iteration ~~has become~~ <u>is</u> unbounded.

Claim 38 (previously presented): The method of claim 31, wherein the step of mathematically generating the comparison string further comprises generating a comparison string of any length.

Claim 39 (currently amended): The method of claim 31, wherein the step of ~~comparing~~ <u>scoring the comparison string</u> comprises ~~scoring of the comparison string by~~ evaluating a function having the comparison string and one of the number of target strings as inputs, ~~such that~~ <u>wherein</u> the evaluation may be repeated for other of the number of the target strings.

Claim 40 (cancelled)

Claim 41 (currently amended): The method of claim ~~40~~ 31, wherein the ~~criteria~~ pre-determined condition or property comprises the comparison string having the highest score, ~~where~~ wherein the score is based on some similarity measure to the target string.

Claim 42 (currently amended): The method of claim ~~39~~ 31, wherein scoring of the comparison string further comprises preliminary testing of properties of the comparison string alone as ~~criteria~~ a criterion to initiate scoring.

Claim 43 (currently amended): The method of claim ~~39~~ 31, wherein scoring of the comparison string further comprises a test of the comparison string using the target string.

Claim 44 (currently amended): The method of claim 43, wherein not all of the ~~numbers~~ data in the comparison string or the target string ~~must be~~ are used in the test.

Claim 45 (currently amended): The method of claim ~~39~~ 43, wherein scoring of the comparison string further comprises a one-to-one comparison between corresponding ~~numbers~~ data in the target string and the comparison string.

Claim 46 (currently amended): The method of claim 45, wherein the one-to-one comparison ~~may be~~ is between corresponding sequential or non-sequential ~~numbers~~ data in the target string and the comparison string.

Claim 47 (currently amended): The method of claim 39, wherein scoring of the comparison string further comprises ~~studying the behavior of the scoring function, such as~~ determining the function's minima and maxima.

Claim 48 (previously presented): The method of claim 39, wherein only the comparison string is used as relevant input to the scoring function.

Claim 49 (currently amended): The method of claim 31, wherein ~~placing a mark on~~ marking the point in the multidimensional map comprises storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table.

Claim 50 (currently amended): The method of claim 31, wherein ~~placing a mark on~~ marking the point in the multidimensional map comprises placing a mark on a point in a video display <u>of the multidimensional map, the video display having pixels representing the points of the map,</u> by changing some graphical property of the corresponding pixel~~, such as color~~ <u>of the point</u>.

Claim 51 (previously presented): The method of claim 31, further comprising:

examining a plurality of subregions of the multidimensional map with higher resolution.

Claim 52 (currently amended): The method of claim 51<u>,</u> wherein the step of examining a subregion comprises reformatting of the target ~~and/~~or comparison string<u>,</u> ~~in order~~ <u>or both the target and the comparison strings</u> to improve the precision and resolution of the method.

Claim 53 (currently amended): The method of claim 52, wherein the step of examining a subregion comprises a reformatting process methodology ~~based on methodologies such as~~ <u>of</u> Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods.

Claim 54 (previously presented): The method of claim 53, wherein the reformatting process is automated.

Claim 55 (currently amended): The method of claim 51, wherein the step of examining a subregion further comprises analyzing ~~and/~~or comparing points of interest <u>or both analyzing and comparing points of interest</u> by examining~~, either~~ visually or mathematically~~,~~ their relative locations ~~and/~~or absolute locations <u>or both their relative and absolute locations</u> within the region.

Claim 56 (currently amended): The method of claim 51, wherein the step of examining a subregion further comprises analyzing ~~and/~~or comparing points of interest or <u>both analyzing and comparing points of interest</u> by examining~~, either~~ visually or mathematically~~,~~ metrics other than location.

Claim 57 (currently amended): The method of claim 56, wherein the metrics can be represented by graphic properties ~~such as shading~~.

Claim 58 (previously presented): The method of claim 51, wherein the step of examining a subregion further comprises repeating the examining step for smaller subregions.

Claim 59 (currently amended): The method of claim 31, wherein the ~~uses for the~~ method ~~comprise~~ is for analyzing large datasets~~, such for DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, and clinical (patient) data~~.

Claim 60 (currently amended): The method of claim 31, wherein the ~~uses of the~~ method ~~comprise~~ is for analyzing datasets consisting of heterogeneous data~~, such as both gene expression data and clinical (patient) data~~.

Claim 61 (currently amended): The method of claim 31, wherein the ~~uses for the~~ method ~~comprise~~ is for data compression.

Claim 62 (currently amended): The method of claim 31, wherein the steps ~~may be~~ are automated.

Claim 63 (currently amended): The method of claim 31, wherein separate processes ~~involved in the steps~~ of generating the comparison string and ~~comparing may be~~ scoring the comparison string are processed simultaneously by a plurality of processors.

Claim 64 (cancelled).

Claim 65 (currently amended): A method for dataset modeling and pattern analysis for a plurality of target strings, wherein each target string is a dataset of data ~~and the target strings can be represented by placing marks on points in a multidimensional map such that patterns within each point or between points are extracted visually or mathematically~~, the method comprising ~~the following steps~~:

(a)   providing a multidimensional map comprising points which can serve as domains for an iterative algorithm to generate datasets of data and each point can be represented by coordinates on the map;

(b) mathematically generating from a point in the multidimensional map a comparison string comprising a dataset of data, wherein the point can serve as the domain for the iterative algorithm to generate a dataset of data;

(c) scoring the comparison string by evaluating a function having the comparison string and one of the target strings as inputs, ~~such that~~ wherein the evaluation may be repeated for a number of the other target strings, to determine for each target string if a mark should be placed on the point in the multidimensional map corresponding to the comparison string; ~~and~~

(d) marking the point in the multidimensional map if it is determined that the point should be marked, wherein the marked point serves as a model for the target string;

(e) repeating ~~the~~ steps ~~of mathematically generating and scoring~~ (a)-(d) for a plurality of comparison strings~~,~~ to generate multiple marked points on the multidimensional map; and

(f) extracting visually or mathematically any patterns formed within each marked point or between the marked points.

Claim 66 (currently amended): A system for dataset modeling and pattern analysis for a plurality of target strings, wherein each target string is a dataset ~~and the target strings can be represented by placing marks on points in a multidimensional map such that patterns within each point or between points are extracted visually or mathematically~~, the system comprising ~~the following~~:

(a) a multidimensional map comprising points in the map which can serve as domains for an iterative algorithm to generate datasets and each point can be represented by coordinates on the map;

(b) means for mathematically generating from ~~a point~~ the points in the multidimensional map ~~a~~ comparison ~~string~~ strings, each comparison string comprising a dataset and each of the points can serve as a domain for an iterative algorithm to generate a dataset;

(c) means for ~~comparing a number of the target strings to the comparison string~~ scoring the comparison string to determine ~~for each target string if a mark should be placed on the point in the multidimensional map corresponding to the comparison string; and~~ if the comparison string meets a pre-determined condition or property related to the target string;

(d) means for marking the points in the multidimensional map if the score of the comparison string meets the pre-determined condition or property; and

(e)   means for ~~repeating the means for mathematically generating and means for comparing for a plurality of comparison strings~~ extracting visually or mathematically any patterns formed within each marked point or between the marked points.

Claim 67 (currently amended): The system of claim 66, wherein the means for mathematically generating the comparison string comprises means for using an iterative algorithm, ~~such that~~ wherein the comparison string is calculated from a point in any set of points that can serve as the domain of ~~an~~ the iterative ~~function~~ algorithm.

Claim 68 (currently amended): The system of claim ~~67~~ 66, wherein the ~~set of points~~ multidimensional map comprises a region of ~~the~~ a complex plane.

Claim 69 (currently amended): The system of claim ~~68~~ 66, wherein the ~~set of points further~~ multidimensional map comprises points in ~~and/~~or near ~~the~~ a Mandelbrot Set, or points both in and near a Mandelbrot Set, or a Julia Set.

Claim 70 (currently amended): The system of claim 66, wherein the means for mathematically generating the comparison string further comprises means for transforming the ~~numbers~~ data in the dataset of the comparison string to have values within a set of interest.

Claim 71 (currently amended): The system of claim 66 ~~wherein the means for mathematically generating the comparison string~~ further comprises means for laying a grid over the points in the multidimensional map.

Claim 72 (currently amended): The system of claim 66, wherein the means for mathematically generating the comparison string further comprises means for restarting ~~the means for~~ mathematically generating the comparison string if the iteration ~~has become~~ is unbounded.

Claim 73 (previously presented): The system of claim 66, wherein the means for mathematically generating the comparison string further comprises means for generating a comparison string of any length.

Claim 74 (currently amended): The system of claim 66, wherein the means for ~~comparing comprises means for~~ scoring of the comparison string ~~by~~ is a means for evaluating a function having the comparison string and one of the number of target strings as inputs, ~~such that~~ wherein the evaluation may be repeated for other of the number of the target strings.

Claim 75 (cancelled).

Claim 76 (currently amended): The system of claim ~~75~~ 66, wherein the ~~criteria~~ predetermined condition or property comprises the comparison string having the highest score, ~~where~~ wherein the score is based on some similarity measure to the target string.

Claim 77 (currently amended): The system of claim ~~75~~ 66, wherein means for scoring of the comparison string further comprises means for preliminary testing of properties of the comparison string alone as ~~criteria~~ a criterion to initiate scoring.

Claim 78 (currently amended): The system of claim ~~74~~ 66, wherein the means for scoring of the comparison string further comprises a test of the comparison string using the target string.

Claim 79 (currently amended): The system of claim 78, wherein not all of the ~~numbers~~ data in the comparison string or the target string ~~must be~~ are used in the test.

Claim 80 (currently amended): The system of claim ~~74~~ 78, wherein the means for scoring ~~of~~ the comparison string further comprises a one-to-one comparison between the corresponding ~~numbers~~ data in the target string and in the comparison string.

Claim 81 (currently amended): The system of claim 80, wherein the one-to-one comparison ~~may be~~ is between corresponding sequential or non-sequential ~~numbers~~ data in the target string and in the comparison string.

Claim 82 (currently amended): The system of claim 74, wherein the means for scoring ~~of~~ the comparison string further comprises means for ~~studying the behavior of the scoring function, such as~~ determining the function's minima and maxima.

Claim 83 (previously presented): The system of claim 74, wherein only the comparison string is used as relevant input to the scoring function.

Claim 84 (currently amended): The system of claim 66, wherein the ~~mark placement on~~ means for marking the point in the multidimensional map comprises means for storing the coordinates of the point corresponding to the target string or storing the properties of the comparison string in memory, a database or a table.

Claim 85 (currently amended): The system of claim 66, wherein the ~~mark placement on~~ means for marking the point in the multidimensional map comprises means for placing a mark on a point in a video display of the multidimensional map, the video display having pixels representing the points of the map, by changing some graphical property of the corresponding pixel~~, such as color~~.

Claim 86 (previously presented): The system of claim 66, further comprising:
means for examining a plurality of subregions of the multidimensional map with higher resolution.

Claim 87 (currently amended): The system of claim 86, wherein the means for examining a subregion comprises means for reformatting the target ~~and/~~or comparison string, or both the target and the comparison strings ~~in order~~ to improve the precision and resolution of the system.

Claim 88 (currently amended): The system of claim 87, wherein the means for examining the subregion comprises a reformatting process methodology of ~~based on methodologies such as~~ Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods.

Claim 89 (currently amended): The system of claim 86, wherein the means for examining a subregion further comprises means for analyzing ~~and/~~or comparing points of interest or both analyzing and comparing points of interest by examining~~, either~~ visually or mathematically~~,~~ their relative locations ~~and/~~or absolute locations or both their relative and absolute locations within the region.

Claim 90 (currently amended): The system of claim 86, wherein the means for examining a subregion further comprises means for analyzing and/or comparing points of interest or both analyzing and comparing points of interest by examining, either visually or mathematically, metrics other than location.

Claim 91 (currently amended): The system of claim 90, wherein the metrics can be represented by graphical properties such as shading.

Claim 92 (currently amended): The system of claim 86, wherein the means for examining a subregion further comprises means for repeating the means for examining for smaller subregions.

Claim 93 (currently amended): The system of claim 66, wherein the uses for the system comprises means is used for analyzing large datasets, such as for DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, and clinical (patient) data.

Claim 94 (currently amended): The system of claim 66, wherein the uses of the system comprise means is used for analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data.

Claim 95 (currently amended): The system of claim 66, wherein the uses for the system comprise is used for data compression.

Claim 96 (currently amended): The system of claim 66, wherein separate processes involved in the means for generating and means for comparing may be processed simultaneously by further comprising a plurality of processors for simultaneously providing the means for generating and for providing the means for scoring the comparison string.

Claim 97 (new): The method of claim 50, wherein the graphical property of the pixel is color.

Claim 98 (new): The method of claim 57, wherein the graphic property is shading.

Claim 99 (new): The method of claim 59, wherein the large dataset is DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, or clinical data from patients.

Claim 100 (new): The method of claim 60, wherein the heterogeneous dataset is a combination of gene expression data and clinical data from patients.

Claim 101 (new): The method of claim 85, wherein the graphical property of the pixel is color.

Claim 102 (new): The method of claim 91, wherein the graphic property is shading.

Claim 103 (new): The method of claim 93, wherein the large dataset is DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, or clinical data from patients.

Claim 104 (new): The method of claim 94, wherein the heterogeneous dataset is a combination of gene expression data and clinical data from patients.